

reinforcement material 14 can become bonded to adjacent structures. Furthermore, it is possible that the reaction exotherm of the curing material could cause the barrier member 12 to melt and thereby either bond to the metal, or displace to permit adhesion of the curing material to the metal.

Preferred embodiments of the present invention have been disclosed. A person of ordinary skill in the art would realize, however, that certain modifications would come within the teachings of this invention. Therefore, the following claims should be studied to determine the true scope and content of the invention.

What is claimed is:

1. A method of reinforcing at least a portion of a structure, the method comprising:

providing a structure;

supporting a flexible barrier member along a portion of the structure for dividing the area of the structure into one or more sections; and

filling one or more of the sections of the structure with a reinforcement material, wherein the flexible barrier member retains the reinforcement material in a desired location and wherein the reinforcement material substantially assists in increasing the strength and stiffness of the structure.

2. The method as defined in claim 1, wherein the flexible barrier member is a polymeric material.

3. The method as defined in claim 1, wherein the flexible barrier member is an inflatable membrane.

4. The method as defined in claim 1, wherein the flexible barrier member is fabricated of an adhesive material.

5. The method as defined in claim 3, wherein the inflatable membrane is inflated by filling the interior portion thereof with a reinforcement material.

6. The method as defined in claim 5, wherein the inflatable membrane is inflated by filling the interior portion thereof with a pumpable substance.

7. The method as defined in claim 5, wherein the reinforcement material filling the flexible barrier member is a heat activated material.

8. The method as defined in claim 5, wherein the reinforcement material filling the flexible barrier member is cured by a change in ambient conditions.

9. The method as defined in claim 5, wherein the reinforcement material filling the flexible barrier member comprises a multiplicity of pellets.

10. The method as defined in claim 3, wherein the inflatable membrane is inflated by filling the interior portion thereof with a gas or liquid substance.

11. The method as defined in claim 1, wherein the reinforcement material filling one or more sections of the structure being reinforced is a pumpable material.

12. The method as defined in claim 1, wherein the reinforcement material filling one or more sections of the structure being reinforced is a polymeric material.

13. The method as defined in claim 1, wherein the reinforcement material filling one or more sections of the structure being reinforced is a heat activated material.

14. The method as defined in claim 1, wherein the reinforcement material is a two component substance reactive at ambient conditions.

15. The method as defined in claim 1, wherein the reinforcement material filling one or more sections of the structure being reinforced is cured by a change in ambient conditions.

16. The method as defined in claim 1, wherein the reinforcement material filling one or more sections of the structure being reinforced is a multiplicity of pellets.

17. A method of reinforcing at least a portion of a hollow cavity, the method comprising:

providing a structure defining a hollow cavity;  
inserting a flexible barrier member within the cavity for dividing the cavity into one or more sections; and  
filling one or more sections of the cavity with a reinforcement material wherein the reinforcement material substantially assists in increasing the strength and stiffness of the structure.

18. A bladder system for reinforcing at least a portion of a structural member, comprising:

a flexible barrier member for dividing at least a portion of a structure to be reinforced into one or more sections; and

a reinforcement material for filling one or more sections bounded by the flexible barrier member, wherein the sections filled by the reinforcement material can be internal or external of the flexible barrier member and wherein the reinforcement material substantially assists in increasing the strength and stiffness of the structure.

19. A bladder system, as defined in claim 18, wherein the structure being reinforced is a portion of an automobile frame.

20. The bladder system as defined in claim 18, wherein the reinforcement material filling one or more sections of the longitudinal structure is a pumpable material.

21. The bladder system as defined in claim 18, wherein the flexible barrier member is polymeric material.

22. A bladder system for reinforcing at least a portion of a structure having an open center, comprising:

a flexible barrier member for dividing a cavity into one or more sections; and  
a reinforcement material for filling one or more sections bounded by the flexible barrier member, wherein the reinforcement material substantially assists in increasing the strength and stiffness of the structure.

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